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SOME OBSERVATIONS ON VENEREAL-DISEASE CONTROL IN THE ROYAL CANADIAN AIR FORCE

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IN THIS communication, it is the intention to present briefly the venereal-disease experience in the R.C.A.F. from the outbreak of hostilities to the end of June, 1945; to discuss the program adopted during 1944; and to present the findings of a study of data recorded on 4,472 Notification, Contact and Facilitation Reports submitted to Air Force Headquarters during 1944, by unit medical officers and command venereal-disease control officers.

The material presented, besides being of interest to the medical services of the armed forces, may afford useful information to physicians in practice and to public health agencies in particular, in their efforts to control venereal disease.

The Incidence of Venereal Disease in the R.C.A.F.

In view of the lack of accurate figures on the incidence of venereal disease among the civilian population, a brief consideration of the recorded venereal-disease experience among male Air Force personnel in Canada is of interest. The trend in attack rates, by quarter-years from January, 1940, to June, 1945, is illustrated by Figure 1. All rates are expressed per 1,000 strength per annum.

There was little important change in the recorded incidence of V.D.G. and V.D.S. among male Air Force personnel up to the end of 1942. From the fourth quarter of 1942, through 1943, there was a substantial decline in the incidence of V.D.G. and V.D.S., but more particularly in the latter disease. The improvement in respect of V.D.S. persisted throughout 1944, whereas the incidence of V.D.G., which during 1943 was more than twenty-five per cent below that for 1942, remained much the same.

The regular collection of information on the incidence of non-specific urethritis (venereal) was not begun until the first quarter of 1943. Since that

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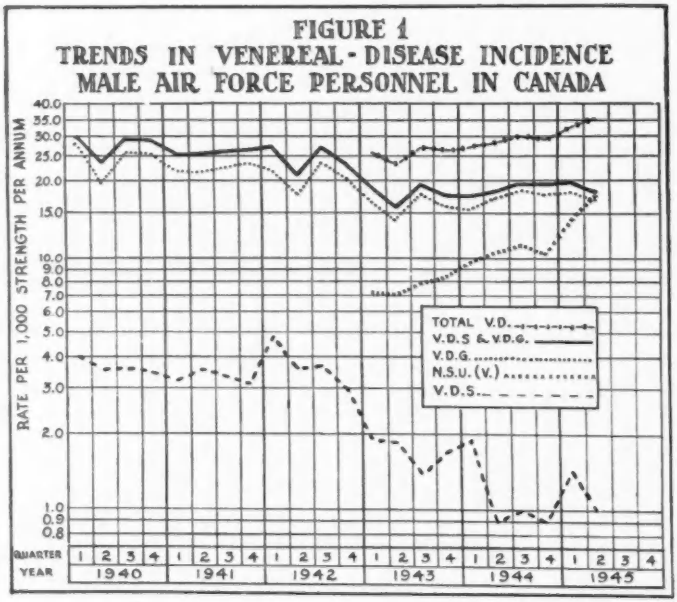
time, the recorded case incidence has steadily increased. During the second quarter of 1945 the rate actually exceeded that for V.D.G.

During the period for which data on all three principal components of the venereal-disease rate—V.D.S., V.D.G. and N.S.U. (Ven.)—are available, the combined venereal-disease rate actually showed a persistent upward tendency, reaching an annual rate of approximately thirty per thousand in the latter part of 1944, and a rate of thirty-five per thousand in the second quarter of 1945.

Analysis of Notification Reports, 1944

Early in the War, the need for close collaboration between service and civilian health authorities, in the effective control of venereal disease, was recog-



nized. Providing the necessary data on contacts was considered to be a major function of the service medical authorities, whereas the investigation and follow-up of contacts is a major function of the civilian health authorities.

To this end, the R.C.A.F. Medical Branch introduced, early in 1941, a routine system of collecting and transmitting information on all V.D. cases, alleged contacts, and the *facilitation process* to all competent authorities. After one year's experience with a trial form (R.233), the data collected and the results obtained were reviewed and a new Notification, Contact and Facilitation Record (M.66) was introduced. This form is reproduced in Figure 2.

Under the plan, immediately upon the diagnosis of every new case, the attending medical officer interviewed the patient and recorded the required facts on the confidential report form. The report was reproduced in quadru-

plicate, one copy retained by the unit medical officer and three copies sent to command headquarters. Of the latter three copies, one was passed to the Provincial Health Department, one to Air Force Headquarters (Venereal Disease Control) and one copy was retained by the Command V.D. Control Officer. This arrangement ensured that the most complete information obtainable regarding cases, alleged contacts, and the facilitation process would become promptly available to all four medical agencies concerned.

CONFIDENTIAL

RCAF M.66
4015-1-44
H.Q.805-M-66

ROYAL CANADIAN AIR FORCE

NOTIFICATION, CONTACT & FACILITATION RECORD

(Venereal Disease)

Disease: VDS..... VDG.... Chancroid.... NSU(Ven.).... Reporting Unit.....
Service: RCAF.... RAF.... RAAF..... RNZAF..... Command.....

THE CASE

1. Number..... Rank..... Name..... Age.....
2. Trade or category..... Marital status..... Religion.....
3. Date of enlistment..... Date of first symptom..... Date reported to M.O.....
4. Date of suspected exposure..... Parent unit at time of exposure..... Condom worn?.....
5. Exposure occurred while on: Annual leave..... emb. leave..... 48 hr. pass..... late pass..... other.....
6. Diagnosis (official nomenclature)..... Date.....
7. Diagnosis confirmed by: Smear..... Culture..... Dark field..... Blood test..... Spinal fluid.....
8. Any previous treatment before diagnosis?..... Type of treatment.....
9. By whom given (civilian doctor, self, druggist, other, specify).....

THE ALLEGED CONTACT *(If more than one contact, prepare separate sheets for each)*

10. Name (record also petnames and aliases).....
11. Address..... Relationship, if any.....
12. Places usually seen or commonly frequented.....
13. Age..... Marital status..... Height: short..... medium..... tall.....
14. Colour of eyes..... Hair..... Build: slight..... medium..... heavy.....
15. Other descriptive facts.....
16. Occupation..... Where employed.....

FACILITATION PROCESS

17. Where was contact met (street, canteen, beer parlour, dance hall, bawdy house, etc. - give details) *(specify address, if possible)*.....
18. How did patient meet contact.....
19. Time met (date and hour)..... Time of exposure (date and hour).....
20. Where exposure occurred (hotel, rooming house, private house, cabin, car, outdoors).....
21. Address of above.....
22. Was a charge made..... Amount.....
23. Payment made to any other person (room rental, hotel clerk, etc.).....
24. Further information re this exposure.....
.....

Date..... Unit..... Signature of M.O.....

FOLLOW-UP ACTION REPORT

HEALTH DEPARTMENT FOLLOW-UP OF ALLEGED CONTACT	INVESTIGATION RE FACILITATION
1. Found infected: VDS..... VDG.....	1. Information sent to.....
2. Examined and found negative.....	2. Action taken.....
3. Not located or examined	
4. No follow-up possible.....	

INSTRUCTIONS: 1. *Complete this form in quadruplicate*

2. *One copy is to be retained by the unit, and three sent to C.A.Q.(P.M.O.)*

3. *C.A.Q. is to retain one copy, and send one to A.F.H.Q.(D.M.S.(Air)), and pass one copy to the Provincial Health Department (Venereal Disease Control).*

4. *All copies are to be countersigned by the medical officer.*

FIGURE 2

Notification, Contact and Facilitation Record (M. 66)

The essential data contained in the notification reports for 1943 have been presented in an earlier communication (1), wherein it was indicated clearly that notification reports demonstrated their value as sources of vital epidemiological information, to both military and civilian health agencies. Certain weaknesses in the system were discussed, notably those concerning the alleged contact, but many salient facts were produced and the approach to the V.D. problem in the R.C.A.F. during 1944 was based in large measure on the facts obtained from this study.

During 1944, a total of 4,472 Notification, Contact and Facilitation Reports for male Air Force personnel *in Canada* were completed by unit medical officers and were submitted, through command venereal-disease control officers, to Air Force Headquarters. These reports comprised 228 cases of syphilis (5.1 per cent), 2,858 cases of gonorrhoea (63.9 per cent), and 1,368 cases of *non-specific urethritis* (*ven.*) (30.6 per cent). Three cases of chancroid and fifteen cases of double infection (V.D.S. and V.D.G.) completed the total of 4,472 cases.*

The Case

Age, Trade and Marital Status

During 1944, half of the cases occurred among personnel 20-24 years of age, sixty per cent among personnel under 25 years of age, twenty-five per cent in the age-group 25-29 years, and ten per cent in the age-group 30-34 years. The incidence of venereal disease, however, actually decreases steadily with age, the highest attack rate (cases in age-group per 1,000 strength in group) occurring among personnel under twenty years of age (48.6), compared with 37.3 in the age-group 20-24 years, 24.3 at ages 25-29 years, 17.9 at 30-34 years, 11.9 in age-group 35-39 years, and an over-all rate of 28.5 per 1,000 strength per annum.

There was little difference in venereal-disease incidence among flying and non-flying personnel. During 1944, the incidence among ground personnel was four per cent below the general rate and the incidence among aircrew personnel was six per cent above the general rate.

The attack rate among single personnel (cases among single men per 1,000 single men) was more than double that among married personnel. More than one-sixth of the cases occurred among men with less than twelve months' service, but more than half of the cases involved men with two or more years' service.

Time of Exposure

In 22.3 per cent of the cases, exposure occurred during a late pass and in 27.4 per cent of the cases exposure occurred while the individual was on a 36-96 hour pass. In 12.2 per cent of the cases infection occurred while the individual was on annual leave.

**With the exception of the section on contact-tracing, the data in this paper are presented without reference to the nature of the disease.*

Prophylaxis

In 3,175 cases (71.0 per cent of the total) a condom was *not* worn and in 117 cases, information on the use of a condom was not available. In 1,180 cases (26.4 per cent) however, a condom *was* reported to have been worn. This figure (26.4 per cent) is higher than that reported previously (20.6 per cent) and includes, of course, cases in which the device was improperly or inadequately used.

Incubation Period

A review of the recorded dates of suspected exposure and onset of first symptoms, in cases of V.D.G. and N.S.U. (Ven.), showed that the interval (presumed incubation period) varied from three days to over forty-two days. Conflict between these data and existing evidence regarding incubation periods may be due to inaccuracies in recording of dates or to attributing disease to an earlier exposure.

The commonest interval between time of exposure and time of first symptoms is from four to six days for both diseases, with half of the V.D.G. cases having intervals from 4-9 days compared with one-third of the N.S.U. (Ven.) cases. The reported interval between date of exposure and date of first symptoms was fifteen days or less in more than 80 per cent of V.D.G. cases compared with but 65 per cent for non-specific urethritis (Ven.). The form of the distribution curves of intervals for V.D.G. and N.S.U. (Ven.) are rather similar but the data suggest that the *true* incubation periods are different.

Reporting — Diagnosis

A constant effort has been made to encourage personnel to seek early the advice of service medical officers in the treatment of venereal disease.

In 26.8 per cent of the cases the individual reported to the medical officer on the same day as the first sign or symptom of infection occurred. In 35.9 per cent of cases the individual reported to the medical officer on the following day, 12.9 per cent of the individuals reported two days after onset of disease, and 16.0 per cent did not report until three to seven days after onset. In 177 cases (4.0 per cent) the individual reported from eight to fourteen days after the recorded date of first symptom and in 124 (2.8 per cent) the individual did not report to the medical officer until two or more weeks after onset.

The penalties for venereal disease (stoppage of pay and entries in Daily Routine Orders) were removed in October, 1942, with a view to eliminating any tendency toward concealment of venereal disease, and any inducement to seek treatment outside the Service.

Out of the 4,472 cases covered in this study, 4,362 or 97.5 per cent reported directly to a service medical officer. Only 110 cases (2.5 per cent) received treatment either by a civilian doctor (87 cases), by a druggist (6 cases), by the individual himself (9 cases) or by other persons (8), before reporting to a service medical officer. There has been, therefore, no significant amount of secret, clandestine treatment. Of the 110 cases receiving previous treatment before reporting to a service medical officer, 82 received "pills", four were given "irrigations", eight received "injections" and the others were given patent medicines or other forms of treatment.

The Contact

Adequacy of Reports on Alleged Contacts

All notification reports were reviewed and assessed as to their adequacy for locating the alleged contact. In 43.2 per cent (1,931) of the cases, the contact information was considered sufficient to enable the alleged contact to be located (the figure for 1943 was 38.3 per cent). In 15.0 per cent (670 cases) the information was classed as incomplete but probably adequate for the location of the alleged contact. In 41.8 per cent of the cases (43.1 per cent in 1943) the information recorded was quite useless for contact investigation.

Thus, despite meticulous care in the conduct of personal interviews, the desired details concerning alleged contacts are very frequently just not obtainable. The method of personal interviews, adopted by the R.C.A.F. for the collection of information from infected personnel, was such as to ensure maximum success and it is not likely that, under ordinary conditions, a better result can be expected. Indeed, in view of the fact that 65.2 per cent (2,916) of the alleged contacts were total strangers, with an acquaintance limited to a few hours in most instances, it is surprising that our medical officers were able to get as much information as they did.

Age, Marital Status, Relationship and Occupation

Reported ages of alleged contacts are only estimates, but it is worth reporting that the records indicated that 13.6 per cent of them were under the age of 20; 53.8 per cent were in the age group 20-24; 17.6 per cent in the age group 25-29 years; and 6.6 per cent were 30 years of age or over. Age was not recorded in 8.4 per cent.

In 26.0 per cent (873) of those cases in which marital status was recorded (3,352 cases), the alleged contact was stated to have been married. In 5.3 per cent (235 of all the cases), the alleged contact was reported to have been the wife. This figure is understated, due to incomplete reporting on wives in the first quarter-year.

The distribution of alleged contacts by occupation was similar to that reported in the 1943 study (1). Waitresses, factory workers, office workers, housewives and domestic help comprised more than one-half of the total alleged contacts. Prostitutes were relatively few in number (62 or 1.4 per cent).

Geographic Distribution of Sources of Infection

Several large municipalities were responsible for a disproportionately large number of the cases. This fact is associated closely with the location of the Air Force units and is also of significance in relation to the time when exposure occurred (pass, leave, etc.).

Analysis of the data showed clearly that highly-infected areas may create a problem not only for the surrounding area or province but also for distant districts or provinces (Table I).

TABLE I

PLACE OF INFECTION AND PARENT COMMAND

Area	Parent Command						Total Cases*
	A	B	C	D	E	F	
British Columbia	3	7	10	29	6	272	334
Alberta	7	51	15	259	8	26	377
Saskatchewan	12	135	21	115	7	8	298
Manitoba	8	337	40	20	9	10	424
Ontario	718	43	351	23	48	21	1,220
Quebec	52	11	600	17	151	18	864
New Brunswick	5	0	88	1	125	2	221
Nova Scotia	5	2	31	3	193	0	234
Prince Edward Island	1	1	44	0	15	0	61
Newfoundland	0	0	3	0	16	2	21
United States	72	24	67	19	29	13	226
Other	5	7	29	4	1	0	47
Not Stated	26	24	24	18	28	21	145
Total	914	642	1,323	508	636	393	4,472

*Figures include other commands.

In many instances, personnel were infected in provinces and areas hundreds of miles away from their parent unit; sources of infection in one municipality or province spread disease widely across the country.* While this phase of the problem is of particular significance for military forces and other mobile populations, it cannot be ignored in peace-time.

Contact Tracing

Control of sources of infection is a major objective, and all efforts at case and contact reporting are particularly designed with this in mind. In order to

TABLE II

FOLLOW-UP OF VENEREAL-DISEASE CONTACTS REPORTED TO PROVINCIAL HEALTH AUTHORITIES*

Province	Contacts Reported	Contacts Located		Contacts Infected		
		No.	Per Cent	No.	Per Cent**	Per Cent†
British Columbia	315	149	47.3	62	41.6	19.7
Alberta	33	22	66.7	22‡	100.0	66.7
Saskatchewan	99	42	42.4	20	47.6	20.2
Manitoba	259	155	59.8	107	69.0	41.3
Ontario	874	195	22.3	37	19.0	4.2
Quebec	473	116	24.5	45	38.8	9.5
New Brunswick	92	42	45.7	26	61.9	28.3
Nova Scotia	177	117	66.1	91	77.8	51.4
Prince Edward Island	32	20	62.5	10	50.0	31.2
Total	2,354	858	36.4	420	49.0	17.8

*Saskatchewan figures cover March, 1944, to March, 1945; Nova Scotia figures cover January, 1944, to May, 1945. All others refer to the calendar year 1944. Contacts of cases of gonorrhoea and syphilis only are included.

**Per cent of those located.

†Per cent of those reported.

‡All V.D. contacts treated if exposure admitted. Treated cases are included with the infected contacts.

**Inter-command exchange of data on contacts was arranged so that the appropriate civilian health authorities were promptly informed.*

ascertain the effectiveness of the program, V.D. Control Officers, therefore, sought and obtained from civilian health authorities the results of contact investigations carried out. A summary of recent experience in the follow-up of alleged contacts of *cases of V.D.G. and V.D.S.* is given in Table II.

The results of efforts to control the spread of venereal disease by the tracing, diagnosis, and treatment of contacts have been disappointing—a finding not peculiar to Canada (2). Only 36.4 per cent of the contacts reported were located and but 49.0 per cent of the persons located (17.8 per cent of the contacts reported) were *diagnosed* as infected.

Success in locating contacts has varied considerably from province to province. Many factors contribute to this, one of which is the fact that adequacy of information on alleged contacts in notification reports varied considerably from province to province. One province reported that the notification forms yielded sufficient details in 74 per cent of the cases, another in 57 per cent of the cases, and another in only 36 per cent. In many cases where the information supplied was classed by us as inadequate, enough details were available to enable the health department to locate the contact. The reverse was also the case in some instances.

If the figures on contacts located and contacts found to be infected (Table II) are expressed in terms of contacts *adequately reported,* the percentages obtained are considerably higher, though still not too good. Apart from the adequacy of contact-tracing data, success or failure in the tracing of contacts is influenced by the number of concentrations of population (large urban centres), the availability and use of trained personnel, and the energy and persistence of the investigators.

Diagnosis

Locating the alleged contact is only part of the problem. The difficulty of establishing a diagnosis of gonorrhoea in the female, even in the best of clinics, is recognized. Where physicians are infrequently called upon to examine a suspect, and where laboratory facilities are meagre, the difficulties are much greater. For example, during a certain period, one province was furnished with data on 787 contacts to gonorrhoea; in 405 cases (51.4 per cent) the information was considered sufficiently adequate to expect successful contact investigation. Actually, only 170 (42 per cent) of the contacts were found and, of these, *only eighteen were proved to have gonorrhoea;* six others were shown to have syphilis. These eighteen individuals represented a small enough percentage (10.6 per cent) of the contacts located and examined, but a depressingly low proportion of the total number of contacts involved (2.2 per cent). In the case of syphilis contacts, a diagnosis of syphilis was established in 13 of 25 contacts (52 per cent) examined during the same period. In another province 41.6 per cent of alleged contacts located and examined were found to be infected (2 with syphilis, 56 with gonorrhoea, and 4 with syphilis and gonorrhoea). This was equivalent to 19.7 per cent of the total number of alleged contacts reported. The story for other provinces is much the same.

Nor is this the whole story. Of the 4,472 cases under study, no less than

1,368 were diagnosed as non-specific urethritis (ven.). In all such cases, notification forms were completed. The information obtained was passed to the provincial health authorities, *when they requested that this be done.* One provincial health department, during a five-month period, proved the presence of gonorrhoea in 22 per cent of the N.S.U. (Ven.) contacts found and examined. This means that where alleged contacts to N.S.U. (Ven.) are *not* examined, still more gonorrhoea in the female goes undiagnosed.

It has frequently been found that the same women are named several times as contacts, despite official reports that such women were located, examined, and found free from infection. This has been a source of discouragement to medical officers in view of the care taken to secure information from infected men. Latterly, however, in some parts of the Dominion, if an individual is named as an alleged contact and she admits exposure, therapy is given. While no duress is employed, few contacts are said to refuse treatment. This approach, and the ease and apparent efficacy of penicillin therapy, may ensure some inroad into the huge reservoir of gonococcal infection in this country.

Our experience suggests the need for increased staffs in public health departments for the tracing of contacts; for an improved perception on the part of many medical officers of health and private practitioners as to the proper methods of diagnosis of gonorrhoea in the female; and probably for an expansion of existing laboratory facilities.

The Facilitation Process

The spread of venereal disease in a community is facilitated by those conditions which make it easy for healthy persons to become exposed. Included under this heading are facts concerning place of meeting, method of contact, place of exposure, charges made, etc. Effective corrective action cannot be taken without information regarding such facilitation factors.

Information on the facilitation process recorded by medical officers on the notification forms was much more complete than that on alleged contacts. In 79.6 per cent of the cases (3,558), the information was classified as being of definite value.

The Problem of Facilitation

Of all phases of venereal-disease control, the facilitation process has presented the most immutable problem. The pattern has become very familiar. An airman goes to a dance hall or beverage room where he meets an unaccompanied and promiscuous young woman who is probably infected. The cheaper type of restaurant is a favourite place to make a "pick-up", and here often the waitress is involved. Certain streets in every town are another prolific source of easy pick-ups. After a brief acquaintance, the couple go to a nearby rooming house or hotel, where registration is probably not very difficult, and there exposure occurs.

This pattern is not peculiar to any one part of the Dominion, nor is it observed only in the larger cities. Almost five hundred cities, towns and villages in Canada and the United States were named during 1944 in the spread of

venereal disease. Certain larger cities are named disproportionately more often than others but no section of Canada can be complacent about its position.

Type of Contact

Alleged contacts are commonly divided into two classes—prostitutes, and all others. During 1944, the Notification, Contact and Facilitation Reports included reference to prostitutes in only 62 cases, or 1.4 per cent of all cases. The addition of other fee-paid contacts raises the number of instances in which a charge was reported to have been made to 111, or 2.5 per cent of the total. This proportion is just slightly more than one-third of that reported in our previous communication (1). In only 32 cases did the infected men report having paid money to any other person than the contact herself.

Place and Method of Meeting

The places of meeting, reported during 1944, are given in Table III.

TABLE III

PLACE OF MEETING

Place	Number	Per Cent
Dance hall	901	20.2
Hotel	745	16.7
Street	657	14.7
Restaurant	625	14.0
Private home	597	13.3
R.C.A.F. station	187	4.2
Train, bus or railway station	109	2.4
Bawdy house	33	0.7
Other*	287	6.4
Not stated	331	7.4
Total	4,472	100.0

*Includes theatre, park, etc.

Dance halls, hotels, street encounters, restaurants, and private homes are of importance in the order named. Organized prostitution is no longer an important factor in the spread of venereal diseases in the R.C.A.F. Less than one per cent of our 1944 cases involved a prostitute in a brothel.

Analysis of the data on how the contact was met showed that in 2,916 cases (65.2 per cent), it was an ordinary "pick-up" process. In 785 cases (17.6 per cent), a "formal" introduction took place, but quite frequently this introduction of two complete strangers was followed in a matter of a few hours by sexual intercourse. Practically all these introductions occurred in the same places as the less formal pick-ups—in the dance halls, the taverns, the restaurants, and on the streets—so that they may be considered as parts of one and the same group.

Place of Exposure

Information on places of exposure is summarized in Table IV.

TABLE IV

PLACE OF EXPOSURE

Place	Number	Per Cent
Hotel	1,432	32.0
Private house	1,205	26.9
Outdoors	625	14.0
Rooming-house	594	13.3
Car	261	5.8
Tourist cabin	80	1.8
Bawdy house	35	0.8
Other*	67	1.5
Not stated	173	3.9
Total	4,472	100.0

*Includes train, etc.

Over forty per cent of all exposures occurred outdoors or in private homes, usually those of the girls. On the other hand, 32.0 per cent of the exposures took place in hotels and 13.3 per cent in rooming-houses. The relative importance of these places varies with the locality. In small communities, hotels and rooming-houses were rarely used, but in the larger cities most exposures involved one or the other.

It may be argued, by some, that it is virtually impossible to prevent unmarried couples from renting a room or cabin. The fact is, however, that certain places are never named, others rarely, and still others are named time and time again on notification reports. We have visited many of the places in each group and the answer is good, indifferent, or bad management, respectively.

RESULTS OF VENEREAL-DISEASE EDUCATION

Education of personnel as to the nature of the venereal diseases—what they are, how they spread, how they are prevented, and how they are cured—has been an integral part of the R.C.A.F. venereal-disease control program. In the beginning, dependence was placed chiefly upon lectures given by the medical officers. Later, this was supplemented with coloured motion pictures prepared by the R.C.A.F. Medical Branch; with other films purchased from the armed services of the United States; and by specially designed posters, booklets, pamphlets, and other educational material.

In order to assess the effectiveness of the program, a questionnaire was sent to all stations to be answered by male personnel. A review of the replies indicated that most of the men had an adequate knowledge of venereal disease. Although thousands of men learned the significance of venereal disease, it is not known how much influence the program had on sexual promiscuity. We do know that during 1944 some 4,237 individuals were infected as the result of extra-marital sexual intercourse, and there is good reason to believe that this represents but a fraction of the total volume of promiscuity. Considering the vast numbers of condoms and chemical prophylactic kits issued, the conclusion is inescapable that promiscuity is, to put it mildly, anything but exceptional.

During 1944, a vigorous educational campaign was carried out on several

stations where venereal-disease rates were excessive. In each case this campaign was followed by a sharp decline in the incidence of venereal disease. This result may have been due to fewer exposures, but an equally if not more likely explanation lies in the concomitant increase in condoms and prophylactic kits issued, despite the fact that medical officers constantly have urged continence as the one certain method of preventing venereal disease, with prophylaxis as the secondary line of defence only.

To attempt to reduce sexual promiscuity by the threat of venereal disease is certainly not getting to the root of the problem. From the beginning, we have never tried to frighten personnel in describing venereal disease to them. Promiscuous tendencies of a few men were modified or temporarily checked by our activities but, for the most part, we feel that nothing we had to say influenced the sex habits of R.C.A.F. personnel very much.

In their lectures, medical officers emphasized the fact that punitive measures were no longer in effect and that there was, therefore, no good reason for the men not reporting promptly to the medical officer. The importance of early diagnosis to treatment was always stressed in all lectures, films, booklets, and other educational material. In 1944, almost two-thirds of the infected men reported within one day of the appearance of symptoms, and of the remainder, only a few delayed more than one week.

The necessity of treatment by a qualified physician was constantly stressed in our educational program. The records show that during 1944, relatively few men (110) sought treatment, initially, outside the Service, and the majority of these (87) went to civilian doctors. Few patients attempted to treat themselves (9) or went to persons other than physicians for treatment (14). In many instances, failure to report to a Service doctor immediately was associated with absence on annual leave, or posting which made it difficult to report to an R.C.A.F. medical officer.

Was our educational program worth the effort put into it? The answer probably should be in the affirmative. The responsibility of the Medical Branch has been to prevent as many infections as possible, and when infection occurred to get the patients under treatment as quickly as possible. This, in some measure, has been accomplished, but we fear that little impression has been made upon the great social problem which lies behind venereal disease. Venereal-disease education alone is not enough. If the underlying problem is to be solved, an influence must be directed toward the social conduct of great numbers of people, long before venereal-disease education is indicated. Those people who shape the characters of our youths—the parents, the teachers, and the clergy—are the ones upon whom this responsibility rests.

Discussion

As in any other communicable disease against which specific immunization is not possible, satisfactory control depends in very large measure on controlling the sources of infection. In consequence, it is evident that active venereal-disease case-finding programs on the part of all civilian health departments offer the best assurance of progressive success in any national venereal-disease con-

trol effort. This is the one great practical object lesson in venereal-disease control for public health in the future.

For more than four years, specific information on places involved in *facilitation* has been furnished to provincial health departments. Medical officers have found this information easier to secure from their patients than information concerning the contact; the men can frequently recall the names of the places they have been when they have no idea of the identity of the girls with whom they were involved.

This information (on alleged contacts and the facilitation process) has been collected and forwarded to health departments in order to assist in controlling the sources and spread of infection. However, our records show that the same dance halls, the same beer parlours, the same restaurants, streets, hotels, and rooming-houses are named time and again. When a place was repeatedly named, to protect our personnel, the Services put that place "out of bounds". Occasionally an interview with the management, and the threat of placing "out of bounds", sufficed to produce satisfactory improvement in conditions. Almost without exception, where improvement has occurred, pressure by the armed forces has been necessary. Public health authorities have apparently been helpless to do anything unaided, and have welcomed the support afforded by the Services.

It has been our duty to protect our personnel from venereal disease, and by putting many places out of bounds we discharged our responsibilities, at least in part. While service personnel were protected, the civilian population did not benefit equally from such measures, for many places out of bounds to the services continued to operate as before.

During the war, it has been possible to collect, with relative ease, a large amount of information on the spread of venereal disease. This information could serve a useful purpose in efforts to eradicate foci of infection in our communities. In peace-time, such information as that discussed in this communication is not readily available and it is, therefore, important that the lessons learned during the war should form the basis for civilian action.

Summary

1. The incidence of V.D.S. among male Air Force personnel in Canada has shown a substantial decline during the past three years. The incidence of V.D.G. on the other hand, following an initial decline of about twenty-five per cent during the years 1939-1942, has failed to show any improvement since. The recorded incidence of non-specific urethritis has risen steadily since reporting began (1943). Recent attack rates for V.D.S., V.D.G. and N.S.U. (Ven.) have been approximately one, eighteen and fifteen per thousand strength per annum.

2. The method of collecting and transmitting information on V.D. cases is outlined and the findings in a study of 4,472 confidential Notification, Contact and Facilitation Reports (M.66) received at Air Force Headquarters during 1944 are presented and discussed.

3. The incidence of V.D. decreases progressively with age, and is twice as

high among single men as among married men. The difference in incidence between flying and non-flying personnel is small. Half of the infections occurred while on short-term pass.

4. In almost two-thirds of the cases, the individual reported to a medical officer within one day of the appearance of symptoms of infection. Only 2.5 per cent of the cases received treatment outside of the Service before reporting to a Service medical officer and only nine attempted self-treatment.

5. Of the total alleged contacts of V.D.S. and V.D.G. cases *reported,* 36.4 per cent were located and 17.8 per cent were found to be infected. Of the alleged contacts *located,* 49.0 per cent were diagnosed as infected. The difficulties in establishing a diagnosis in infected contacts are discussed. The need for increased activity in contact-tracing and extended diagnostic facilities is noted.

6. Over two-thirds of alleged contacts were under 25 years of age. One-seventh were said to be under twenty. One-quarter of alleged contacts were stated to be married. Waitresses, factory workers, office workers, housewives and domestic help comprised over one-half of the total alleged contacts. Prostitutes were relatively few in number (1.4 per cent).

7. One-third of exposures occurred outside the province in which the individual reported for treatment. Sources of infection in any area are shown to be responsible for spread of disease to distant points.

8. Almost five hundred cities, towns and villages in Canada were named during 1944 in the spread of venereal disease. Dance halls, hotels, and restaurants lead in importance as places of initial encounter between case and contact.

9. The casual "pick-up" is the leading source of infection, being reported as the source of infection in over three-quarters of all V.D. cases. Organized prostitution is no longer an important factor.

10. Over forty per cent of exposures occurred in private homes or outdoors, but almost fifty per cent occurred in hotels, rooming-houses and cabins.

11. The R.C.A.F. venereal-disease educational program and some possible results of it are reviewed and discussed.

12. The practical application of the findings of this study to venereal-disease control in peace-time is discussed.

Acknowledgments

We should like to record formal acknowledgment of the work of R.C.A.F. venereal-disease control officers and station medical officers in collecting the information on which this communication is based. To these men and to the command hygiene officers goes much of the credit for any success which the R.C.A.F. may have had in venereal-disease control.

We take this opportunity also to record our appreciation of the close co-operation and assistance given the R.C.A.F. Medical Branch by provincial and local health departments throughout Canada during the war in pursuing the R.C.A.F. venereal-disease control program.

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STATE OF HEALTH OF THE PEOPLE OF CANADA IN 1944*

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THE state of health of the people of Canada during 1944, as recorded by the preliminary figures for births, marriages and deaths and the reported cases of communicable diseases, did not show any marked changes from previous years. There were no major epidemics and the death rate from all causes showed a slight decrease from the rate of 1943. The mortality rates for certain causes continued a downward trend, while others which have been decreasing for a period of years increased slightly.

The tuberculosis mortality rate was the lowest ever recorded in Canada; the maternal mortality rate continued to decrease.

The infant mortality rate showed a slight increase largely due to an increase in deaths from diarrhoea and enteritis.

The birth rate, which had increased every year since 1939, showed a slight decrease in 1944. There was also a decrease in the marriage rate.

There was a decrease in the total number of reported cases of communicable diseases. Chickenpox, diphtheria, poliomyelitis, German measles, scarlet fever and typhoid fever had an increased incidence but there were fewer cases reported of measles, mumps and whooping cough. There were more cases and deaths recorded for diphtheria than there have been for several years.

Population

The population of Canada exclusive of Yukon and the Northwest Territories was 11,958,000 as of June 1, 1944, according to estimates made by the Dominion Bureau of Statistics (Social Analysis Branch).

TABLE I
CANADA 1944
ESTIMATED POPULATION BY SEX FOR CERTAIN AGE GROUPS

Age	Total	Male	Female
0–19 years	4,383,000	2,220,000	2,163,000
20–39 "	3,793,000	1,922,000	1,871,000
40–59 "	2,504,000	1,311,000	1,193,000
60–79 "	1,163,000	611,000	552,000
80 and over	115,000	54,000	61,000
	11,958,000	6,118,000	5,840,000

**Tabulations are made according to place of residence and based on preliminary figures, exclusive of Yukon and Northwest Territories.*

Births

TABLE II

BIRTH RATES PER 1,000 POPULATION FOR CANADA AND THE PROVINCES, 1940-1944

	Canada	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1940.....	21.5	22.3	22.6	25.6	25.7	18.2	20.1	21.5	22.0	17.2
1941.....	22.2	21.8	23.9	26.6	26.9	19.0	20.2	20.6	21.9	18.4
1942.....	23.4	23.9	25.7	27.0	28.2	20.0	21.5	21.6	23.7	19.3
1943.....	24.0	23.9	25.1	28.0	28.7	20.6	22.5	22.1	24.5	20.8
1944.....	23.7	25.2	25.1	29.2	29.2	19.7	21.9	21.4	23.7	20.4

The number of births in 1944 was 283,975 with a birth rate of 23.7 per thousand population. This rate was slightly lower than in 1943, when it was 24.0. The provinces of Prince Edward Island, New Brunswick and Quebec showed increases over the preceding year and these three provinces had the highest rates in 1944.

Marriages

TABLE III

MARRIAGE RATES PER 1,000 POPULATION FOR CANADA AND THE PROVINCES, 1940-1944

	Canada	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1940.....	10.9	7.4	11.2	10.7	10.7	11.0	12.2	8.7	11.1	12.0
1941.....	10.6	7.1	11.4	10.8	9.8	11.4	11.4	7.9	10.6	11.9
1942.....	10.9	8.6	11.6	10.6	10.0	11.7	11.6	8.5	11.6	12.4
1943.....	9.4	7.2	10.1	8.6	9.8	9.2	9.5	7.3	9.8	10.4
1944.....	8.5	7.1	9.7	8.3	9.1	7.9	8.6	7.0	8.9	9.0

There was a decrease in the number of marriages during the year. The number in 1944 was 101,464 compared with 110,937 in 1943. The number in 1944 was 25,908 less than in the peak year of 1942, when the number was 127,372. The rate decreased from 9.4 in 1943 to 8.5 per thousand population in 1944 and there was a decrease in the rate in all provinces.

Deaths

TABLE IV

DEATH RATES PER 1,000 POPULATION FOR CANADA AND THE PROVINCES, 1940-44

	Canada	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1940.....	9.8	11.3	11.0	10.9	10.0	10.3	8.7	7.3	7.9	10.3
1941.....	10.0	11.9	11.9	11.1	10.3	10.3	8.8	7.3	8.0	10.4
1942.....	9.7	10.7	10.8	10.9	10.0	10.1	8.8	7.4	7.8	10.2
1943.....	10.0	10.2	10.6	10.5	10.2	10.5	9.6	8.1	8.2	11.0
1944.....	9.7	10.1	10.0	11.1	9.9	10.0	9.1	7.6	7.7	10.4

The number of deaths in 1944 at all ages and from all causes was 115,687 compared with 118,531 in 1943, and the rate decreased from 10.0 to 9.7 per thousand population. New Brunswick had the highest death rate with 11.1 and the Prairie Provinces the lowest. The lower rates in the Prairie Provinces are to some extent due to the more favourable age distribution of the population.

Age Specific Mortality

The age specific death rates for certain age-groups for the years 1930-32,

1940-42 and 1944 are shown in Table V, together with the proportion of the total population and of the total number of deaths in the age-groups. There are three points which deserve to be emphasized in this table. First, the death rate for the population as a whole and for all age-groups has declined. Secondly, this decline has been most marked for the early years of life, and least for the late years. The infant mortality rate fell 30 per cent from 1930-32 to 1940-42, and 40 per cent to 1944. Death rates for all ages up to age 40 declined by comparable percentages. On the other hand, death rates for the population of 60 years and over fell only 0.14 per cent from 1930-32 to 1940-42 and only 2.8 per cent to 1944. Thirdly, the proportion of young and adolescent children is declining, while that of old people is increasing. The increase in the under 1 year group in 1944 over the 1940-42 period is due to the rise in the birth rate. In particular, the proportion of the population 60 years and over rose from 8.4 per cent in 1931 to 10.2 per cent in 1941. As a result, the general death rate declined only slightly, and may in fact be expected to rise somewhat in the future, even though most of the age specific mortality rates continue to decline.

TABLE V

AGE SPECIFIC MORTALITY RATES, PROPORTION OF POPULATION AND PROPORTION OF DEATHS IN CERTAIN AGE GROUPS IN CANADA, IN THE PERIOD 1930-32, 1940-42 AND THE YEAR 1944

	1930–32			1940–42			1944		
Age	Per cent of Pop'n	Per cent of Deaths	Death Rate	Per cent of Pop'n	Per cent of Deaths	Death Rate	Per cent of Pop'n	Per cent of Deaths	Death Rate
Under 1 yr.	2.0	18.7	97.6	1.9	12.9	67.8	2.2	13.4	58.4
1–4.....	8.4	5.1	6.2	7.3	3.0	4.1	7.6	2.9	3.7
5–14.....	21.3	3.7	1.8	18.7	2.4	1.3	17.7	2.2	1.2
15–19.....	10.0	2.4	2.4	9.7	1.7	1.7	9.2	1.5	1.6
20–39.....	29.8	11.0	3.8	31.3	8.7	2.7	31.7	7.6	2.3
40–59.....	20.1	16.9	8.6	20.9	17.8	8.3	20.9	17.1	7.9
60–79.....	7.7	30.3	40.4	9.3	37.5	39.7	9.7	38.9	38.7
80 and over.	0.7	11.9	169.4	0.9	16.0	167.8	1.0	16.4	164.5
Total....	100.0	100.0	10.2	100.0	100.0	9.8	100.0	100.0	9.7

Infant Mortality

TABLE VI

DEATH RATES OF CHILDREN UNDER ONE YEAR, PER 1,000 LIVE BIRTHS, 1940-44

	Canada	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1940.....	56	65	62	80	70	43	51	51	48	38
1941.....	60	79	66	76	76	45	53	51	51	37
1942.....	54	49	58	77	70	40	51	44	38	36
1943.....	54	45	59	68	67	42	55	47	42	38
1944.....	55	45	54	77	68	43	49	47	46	40

The number of infant deaths was 15,511 compared with 15,213 in 1943. The death rate showed a slight increase from 54 per thousand live births in 1942 and 1943 to 55 in 1944. New Brunswick had the highest rate with 77, an increase over the previous year when the rate was 68; British Columbia had the lowest rate with 40, which was an increase over the rate of 38 for 1943. Infant

mortality rates of less than 30 per thousand have been attained by certain countries and should be possible of attainment by all provinces in Canada. In 1944, Nova Scotia and Manitoba showed decreases; two of the other provinces had the same rate as in 1943 and six of them showed an increase.

Maternal Mortality

TABLE VII

DEATH RATES PER 1,000 LIVE BIRTHS FROM PUERPERAL CAUSES, CANADA, 1940-44

	Canada	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
1940	4.0	2.8	4.3	4.6	4.5	3.7	3.8	3.2	4.0	3.2
1941	3.5	2.9	3.5	3.4	4.4	3.0	3.1	3.2	3.0	2.6
1942	3.0	4.7	2.6	4.6	3.3	2.6	2.6	3.3	2.3	2.7
1943	2.8	4.1	3.7	2.9	3.2	2.4	2.4	2.6	2.6	2.5
1944	2.7	5.2	2.2	3.2	3.1	2.5	3.1	2.3	1.6	2.6

The number of deaths during the year was 775; in 1943 it was 795. The maternal mortality rate again showed a decrease from 2.8 in 1943 to 2.7 in 1944. Prince Edward Island had the highest rate, 5.2, while Alberta had the lowest, 1.6.

CAUSES OF DEATH

Seventy-five per cent of the deaths in 1944 were due to cardiovascular-renal diseases, cancer, violent and accidental causes, pneumonia and influenza, tuberculosis, and diarrhoea and enteritis.

Cardiovascular-renal Diseases

TABLE VIII

DEATH RATES PER 100,000 POPULATION IN CANADA FOR THE YEARS 1941 TO 1944 CARDIOVASCULAR-RENAL DISEASES

Cause of Death	1941	1942	1943	1944
Diseases of the heart	231.5	236.6	248.3	242.9
Intracranial lesions of vascular origin	78.6	75.0	78.4	75.6
Diseases of the arteries	19.7	19.5	21.2	19.7
Nephritis	64.4	62.2	63.4	59.5
Total	394.2	393.3	411.3	397.7

The largest number of deaths is due to the group of cardiovascular-renal diseases and in 1944 forty-two per cent of the total deaths from all causes were in this group. The Fifth Revision of the International List of Causes of Deaths has been used since 1941 for classifying causes of death. This revision made very definite changes in the allocation of the individual diseases in this group, especially in the preference given to the individual diseases when two of them were recorded on the same certificate. The rate for the group has increased from 305 per 100,000 in 1935 to 398 in 1944.

Cancer

TABLE IX

DEATHS AND DEATH RATES PER 100,000 POPULATION FOR THE YEARS 1935 TO 1944

CANCER

International List Nos.: (1929) 45-53; (1938) 45-55

	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Deaths.	11,156	11,694	11,963	12,038	12,399	13,322	13,417	13,654	14,135	14,215
Rate....	103.0	107.0	108.5	108.1	110.2	117.2	116.8	117.3	119.8	118.9

In 1944 there were 14,215 deaths from cancer compared with 14,135 deaths in 1943, but the death rate showed a slight decrease from 119.8 in 1943 to 118.9 in 1944. British Columbia had the highest rate in 1944, 144.6. Alberta had the lowest rate, 94.7. The wide variation in the rates of the respective provinces is due largely to the differences in age composition.

Violent Deaths

In 1944 there were 7,640 violent deaths with a death rate of 63.9. The rate has decreased from 73.5 in 1941, which was the highest rate that had been recorded in the period since 1926. The decrease in deaths due to motor vehicle accidents constitutes more than half the total decrease.

Accidental Deaths

There were 6,802 accidental deaths in 1944 with a rate of 56.9 as compared with 7,385 deaths and a death rate of 62.6 in 1943. British Columbia had the highest rate, 69.4, Ontario was second with 63.5, and Saskatchewan was lowest with 47.5.

Suicides

There was a further reduction in the number of sucides in 1944, when the number was 728 as compared with 758 in 1943. There has been a decrease from the high rate of 9.9 in 1930 to 6.1 in 1944, the lowest yet recorded.

Homicides

There were 106 homicides in 1944, compared with 125 in 1943 and 113 in 1942.

Pneumonia and Influenza

The number of deaths from pneumonia and influenza has decreased from 8,754 in 1943 to 7,785 in 1944 and the rate from 72.8 to 65.1 per 100,000. In 1944, New Brunswick had the highest rate with 98.3 and Ontario the lowest with 53.2.

Tuberculosis

There were 5,712 deaths from tuberculosis in 1944, with a rate of 47.8 per 100,000. This is the lowest rate yet recorded. The mortality rate from tuberculosis decreased steadily up to 1939, but since that time there has been a slowing up in the rate of decrease for Canada as a whole. In the period 1935 to

1940, the rate decreased 15 per cent and in 1940 the rate of 50.9 was the lowest which had been recorded. In 1941 the rate increased to 53.1 but decreased in the following years and the rate for 1944 is six per cent lower than the rate for 1940. In Nova Scotia, New Brunswick and British Columbia, which showed high death rates in 1940, the rate in 1944 decreased over 20 per cent.

Diarrhoea and Enteritis

There was an increase in the mortality from these diseases in 1944, when the number of deaths was 2,693 and the death rate 22.5 In 1943, there were 1,872 deaths and the death rate was 15.9. There were increases in the rates in all provinces except Manitoba and the increases were specially marked in New Brunswick, Quebec and Ontario.

Communicable Diseases

The number of cases of communicable diseases reported in 1944, exclusive of syphilis and gonorrhoea, amounted to 187,002 as compared with 217,760 in 1943. Eight diseases were the cause of more than 90 per cent of the reported cases. The cases and morbidity rates and deaths and mortality rates for these diseases for the years 1941 to 1944 are shown in Table X arranged in order of the number of cases reported in 1944.

TABLE X

Cases and Deaths from Eight Communicable Diseases, Canada, 1941-1944

Disease	Year	Cases		Deaths		Disease	Cases		Deaths	
		No.	Rate*	No.	Rate*		No.	Rate*	No.	Rate*
Measles	1941	81,051	705.4	325	2.8	Tuberculosis	10,475	91.2	6,072	52.8
	1942	26,258	225.6	131	1.1		12,015	103.2	5,980	51.4
	1943	60,485	512.8	190	1.6		12,361	104.8	6,168	52.3
	1944	55,317	462.6	239	2.0		15,060	125.9	5,712	47.8
Chickenpox	1941	27,867	242.5	19	0.17	Influenza	9,656	84.0	2,411	21.0
	1942	30,914	265.7	28	0.24		3,397	29.2	1,227	10.5
	1943	30,453	258.2	29	0.25		16,839	142.8	2,413	20.5
	1944	35,496	296.8	34	0.28		12,513	104.6	1,860	15.6
Scarlet fever	1941	16,966	147.7	117	1.0	Whooping cough	16,647	144.9	437	3.8
	1942	20,648	177.4	129	1.1		18,384	158.0	559	4.8
	1943	18,639	158.0	100	0.8		19,082	161.8	416	3.5
	1944	20,945	175.2	115	1.0		12,384	103.6	336	2.8
Mumps	1941	22,936	199.6	19	0.2	Diphtheria	2,866	24.9	240	2.1
	1942	52,344	449.8	46	0.4		2,955	25.4	256	2.2
	1943	48,304	409.5	35	0.3		2,804	23.8	287	2.4
	1944	19,819	165.7	5	0.4		3,223	27.0	309	2.6

*Rate per 100,000 population.

Measles

In 1944, Manitoba had the highest morbidity rate and Prince Edward Island the lowest. Manitoba had the highest death rate, 7.9 per 100,000, and Prince Edward Island did not have any deaths.

Chickenpox

British Columbia had the highest morbidity rate, 549.5 per 100,000, and Prince Edward Island had the lowest, 6.6.

Scarlet Fever

Alberta had the highest morbidity rate, 315 per 100,000, and the provinces of Ontario, Manitoba and British Columbia showed an increased incidence. The highest mortality rate, 1.6 per 100,000, was in Quebec. Prince Edward Island had the lowest morbidity rate, 7.7, and no deaths.

Mumps

In 1943 mumps held second place in prevalence among communicable diseases with the reported cases numbering 48,304. In 1944 the number of reported cases was 19,819 and the disease had dropped to fourth place in prevalence. Quebec was the only province that showed an increase in the number of reported cases from this disease.

Tuberculosis

The rate for reported cases was highest in Quebec and British Columbia and lowest in Prince Edward Island.

Influenza

There was a decrease in the number of cases reported in 1944, 12,513 compared with 16,839 in 1943. Of the provinces reporting, British Columbia had the highest morbidity rate, 501.6, and Saskatchewan the lowest, 29.4.

Whooping Cough

Nova Scotia had the highest case rate, 204 per 100,000, and Prince Edward Island did not report any cases. Manitoba had the highest death rate, 6.4; New Brunswick was second with 6.1, and British Columbia was lowest with 1.1.

Diphtheria

There was an increase in the morbidity rate in all the provinces except Nova Scotia and British Columbia. In Nova Scotia the rate decreased from 128 per 100,000 in 1943 to 64 in 1944.

The diseases which comprise the remaining ten per cent of the cases reported are shown in Table XI for the years 1943 and 1944.

TABLE XI

CASES REPORTED OF CERTAIN DISEASES IN CANADA, 1943 AND 1944

Disease	1943	1944	Disease	1943	1944
Typhoid fever	1,094	1,203	Encephalitis (infectious)	43	31
Poliomyelitis	327	722	Puerperal septicaemia	20	23
Septic sore throat	611	660	Trachoma	26	20
Dysentery (all forms)	760	520	Actinomycosis	6	8
Meningitis (meningococcal)	516	399	Tularaemia	6	7
Erysipelas	411	396	Botulism	–	6
Undulant fever	189	226	Rocky Mountain spotted fever	1	3
Conjunctivitis (non-gonorrhoeal)	107	203			
Paratyphoid fever	60	41	Leprosy	1	1
Malaria	1	38	Tick paralysis	–	1
Vincent's angina	52	38	Trichinosis	23	1

Typhoid Fever

Typhoid fever showed a decrease from 1,203 cases reported in 1944 to 1,093 in 1943. Most of the provinces showed an increased incidence. The increase was highest in Alberta and occurred during the months of March and April.

Poliomyelitis

Six of the provinces reported more cases in 1944 than in 1943.

Province	*1944*	*1943*
Nova Scotia	20	9
New Brunswick	85	18
Ontario	337	81
Manitoba	99	38
Alberta	97	20
British Columbia	19	8

The three other provinces showed a decreased incidence. There were 39 deaths from this disease in Canada in 1944, 21 of them occurring in Ontario. New Brunswick had the highest death rate, 0.9 per 100,000.

Malaria

One case of malaria was reported in 1943 and 38 in 1944. Of these cases, six were reported in Ontario, one in Saskatchewan and 31 in British Columbia.

AN OUTBREAK OF FOOD POISONING IN PRINCE ALBERT, SASKATCHEWAN

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ON JANUARY 7, 1946, the sanitary inspector of Prince Albert notified the Director of Sanitation, Public Health Department, Province of Saskatchewan, that approximately twenty persons had taken suddenly and violently ill after eating their noon meal at a café in Prince Albert. The inspector, after preliminary inquiry in consultation with the medical officer of health, had seized the remains of the dessert served—"pineapple trifle"—and sent a sample to the Provincial Laboratory for analysis and bacteriological study. The medical officer of health ordered the café to be closed.

Preliminary Investigation

The story, as given over the telephone, presented a typical picture of food poisoning as a result of the enterotoxin of staphylococcus. The Provincial Epidemiologist visited the café in question, accompanied by the local medical officer of health and the sanitary officer. The proprietor of the café and the kitchen help were Chinese; the serving staff were white Canadian girls. They co-operated well and seemed anxious to learn methods of avoiding future outbreaks. All the employees were examined for evidence of communicable disease or any infected lesions of the skin, particularly on the hands, arms, ears, nose and throat. All appeared healthy; all were cleanly and wore fresh clothing. The premises were well lighted and ventilated and had been recently redecorated and modernized. A few cockroaches were found, but, everything considered, the café was well above average for cleanliness and appearance.

The local authorities reported that all cases had eaten the "pineapple trifle". It was decided to take samples of all ingredients used in making the dessert, and send these to the Provincial Laboratory for examination.

The pudding had been prepared about 9 p.m. on January 6th. It was made from left-over cake, and cornstarch mixed with sugar, milk and pineapple. It had then been held, unrefrigerated, for approximately 18 hours prior to serving.

A number of the cases were from the nearby village of Paddockwood and had been too ill to return home. Three of these were located in the Avenue Hotel and gave the following history: About one to four hours after eating their noon meal at the café, they were taken with extreme nausea and violent vomitting accompanied by persistent diarrhoea. Cramps were marked in some cases, absent in others. These symptoms had lasted from two to six hours, leaving the patient in a state of shock, and still weak and unable to eat anything the

following day. This picture was typical, and from the information available it was decided as a working hypothesis that the pudding was the offending article of food. After all remaining pudding had been seized, the local authorities advised that it would be safe to reopen the café. Prior to this, the kitchen staff were instructed on the dangers of incurring staphylococcus infection of foods by leaving them unrefrigerated for any length of time.

While gathering data during the remaining portion of that day and the one following, the epidemiologist, the local medical health officer, and the sanitary officer interviewed as many cases as possible and collected detailed information as to the foods eaten. It proved much easier to find cases than it was to find the controls, particularly as it was necessary to visit the village of Paddockwood and outlying farms—some as much as thirty miles distant from Prince Albert. Hearsay evidence was not considered. However, as it was not possible to find all the cases, the evidence of someone who had actually lunched with the person in question was considered adequate. The Humphries Clinic and the two hospitals were most co-operative in furnishing information.

Thirty-eight cases were found, all of whom presented the same clinical picture with the exception of a young girl of 15, who became sick eight hours after eating and after vomiting twice was perfectly well. The name, address, age, sex, time of eating, time of onset, symptoms, duration of symptoms, and details of food eaten were noted for all cases.

A typical example of a family affected was the "X" family from Paddockwood. Mr. and Mrs. "X", with their two children, and accompanied by Mr. and Mrs. "Y", had lunch at the restaurant. Mr. and Mrs. "Y" became violently ill and were taken to the hospital within two and one half hours after their meal, which had included the "pineapple trifle". Mr. and Mrs. "X" took ill at approximately the same time and had to receive medical care, remaining in the hospital overnight. They, also, had partaken of the trifle. Their two children, aged 3 and 5, chose ice cream rather than the trifle and remained perfectly well.

Mrs. "K" was in town with her ten-year-old son. An hour and a half after eating her meal—which included the trifle—she became violently ill, the symptoms lasting for four hours. Master "K" chose ice cream and was perfectly well.

The information collected showed that the foods eaten which were common to all cases appeared with the following frequency: Pudding, 99+ per cent; soup, 76 per cent; mashed potatoes, 75 per cent; diced beets, 69 per cent. Of the 27 controls, complete data could be obtained in only 16 cases. However, it was definitely established that none of the remaining 11 had eaten pudding. Of the 27, three stated that they had eaten the pudding without suffering any ill effects. Two of these latter cases were employees of the café. Among the controls, food items which occurred with the greatest frequency were as follows: Pudding, 10 per cent; soup, 53 per cent; potatoes, 53 per cent; and beets, 53 per cent. From these figures, therefore, it would appear that the pudding was the offending item served that day at the restaurant; the evidence being that everyone that became ill had eaten the pudding—with the exception of the one case which did not appear typical of enterotoxin poisoning. This patient stated

that she did not think that she had become ill because of anything she had eaten, but rather because of association with several of the cases whom she had helped to look after. Ninety per cent of the controls did not eat the pudding and were not ill. No other food showed this striking difference between cases and controls.

DISTRIBUTION OF COMMONER FOODS AMONGST CASES AND CONTROLS

CASES	Soup		Potatoes		Beets		Pudding		Total Cases and Controls
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	
	25	76	25	75	22	69	37	100	38
CONTROLS	9	53*	9	53*	9	53*	3	10	27

*Complete information only available for 16 controls.
Percentage is based on the number who ate the particular food and the total number of cases or contacts for whom complete information as to foods eatten was available.
Average incubation period—two and one-third hours.
Average duration of main symptoms or stage of most discomfort—7.3 hours.

LABORATORY FINDINGS

The samples sent to the Laboratory consisted of the cake and cornstarch portion, the pineapple, cornstarch powder from the carton, and meringue powder.

Chemical Analysis

The pudding was investigated for the presence of chemical contaminants. It was negative for the presence of cadmium, fluoride, and arsenic.

Bacteriological Analysis

The pineapple and the cornstarch showed no growth on culture, but the pudding itself grew large numbers of *Staphylococcus aureus* and *albus*. *Staphylococcus aureus* and *albus* were also found in the meringue powder. (Meringue had been added to the trifle just prior to serving. It was made up shortly before and had been kept in the refrigerator. No samples remained at the time of the investigation.) *Staphylococcus aureus*, isolated from the pudding, gave a positive coagulaze test. The remainder of the staphylococcus organisms in both pudding and meringue powder were negative for this test. Pneumococci were also found in the pudding. The *Staphylococcus aureus* filtrate was prepared following the technique used by Dolman, and injected into a kitten. This kitten become violently ill within a period of less than two hours, exhibiting the typical symptoms described by Dolman.[1,2] It died between 24 and 48 hours later. A *Staphylococcus aureus* filtrate prepared from the meringue powder had no effect on a kitten.

SUMMARY

1. An outbreak of food poisoning is described which would appear to be due to contamination of a dessert by staphylococcus. Thirty-eight cases and 27 controls were investigated.

2. The offending food was identified by epidemiological methods, and an enterotoxin-producing staphylococcus organism was isolated.

Recommendations

Such outbreaks can be prevented by the following means:

1. Education of food handlers in the understanding of the chain of events leading to the successful growth of staphylococcus in foods.

2. Supervision by the sanitary officers to insure that the proper hygienic technique is being used in restaurants and that refrigeration is adequate and being intelligently applied.

3. Prompt action by the local authorities in procuring samples of food as early as possible following any outbreak so that the offending food may be determined and removed from the menu.

I wish to thank the Medical Officer of Health and the Sanitary Inspector of Prince Albert for their co-operation in following up these cases, and also the local doctors who kindly furnished information. I am indebted also to the staff of the Provincial Laboratory for their co-operation in providing the laboratory investigations.

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Correction

In the article "An Epidemic of Septic Sore Throat at Salmon Arm, B.C.", published in the November issue, the sentence on page 422, beginning on line 6, should have read: "Subsequently the 'A' cow again developed acute mastitis following an injury to the udder."

MORTALITY REDUCTIONS IN ONTARIO
1900-1942

V. Diphtheria

J. T. PHAIR, M.B., D.P.H.
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Province of Ontario
AND
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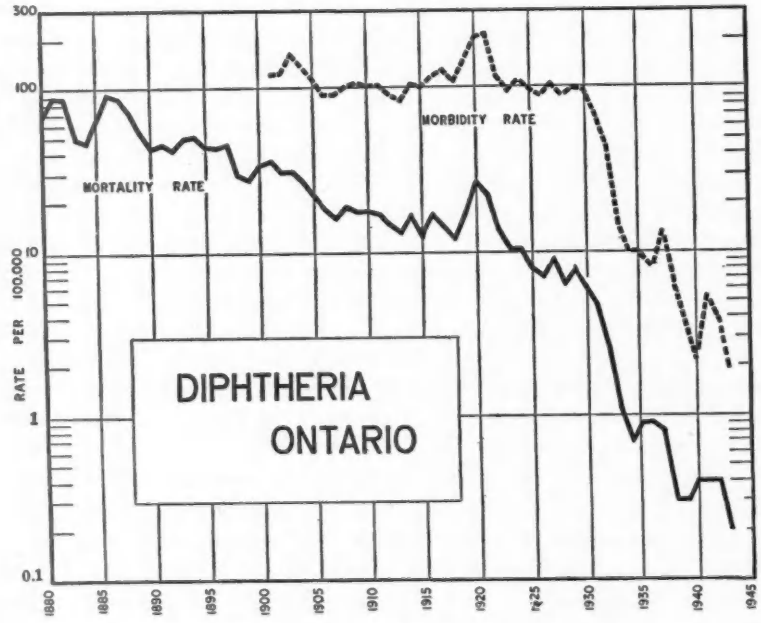
THE decline in diphtheria mortality in Ontario from 33.9 per 100,000 in 1900 to 6 in 1930 and to 0.4 in 1942 accounts for over one-fifth of the total decline in mortality in that time in the 1-4 age group, one-third of that in the 5-9 age group, and nearly one-fifth of that in the 10-14 age group, as well as contributing to the declines in mortality in infancy and in later adolescence (1,2). The decline, slow and interrupted in the pre-toxoid years, became strikingly precipitate with the general application of active immunization. This is common knowledge, but, in the Ontario experience preceding the use of toxoid, there are other features—failures—recognition of which is essential to sound public health and medical practice to-day. There are other reasons, too, for presenting again (3) at this time the record in Ontario: An increase in diphtheria in the past year in many parts of this continent, including this country and this province, constitutes a threat to any area where immunization has not been attained and maintained at a high level. Schick testing in the Canadian Army (4) showed immunity in only one-half, approximately, of young adults (the troops' information regarding their receipt of toxoid in civilian life was far too uncertain to warrant any estimate of the proportion who had had that advantage; the general impression, however, was that it was small). Similarly, Dr. P. S. Campbell (5), Chief Health Officer, Nova Scotia, reported in 1941 that, on Schick testing students in Dalhousie University and in the Provincial Normal School, as well as other adult groups, the large majority were found to be Schick-positive. In certain Canadian cities where records of immunizations are available they show the number immunized annually in recent years to be less than half the births; a large part of the child population is at present therefore highly susceptible. The Service experience showed, too, that death from diphtheria occurred occasionally even though medical attention was constantly at hand for complete supervision and immediate diagnosis and treatment. Here, then, in the plate are shown the reported diphtheria mortality rates, 1880 to 1943, and the morbidity rates, 1901 to 1943.

Looking at the line representing the *morbidity* rates, it is immediately apparent that it divides itself naturally into two parts—before 1930 and after. Until

that year the rates maintain a general level, marked, not by any significant or sustained decline, but rather by a very pronounced upward swing around 1920, in which year and in 1921 the rate rose to higher peaks than it had reached in the previous twenty years. Following this, the rates dropped back to the previous level, which they held until about 1930 when a precipitate decline set in, carrying them from the level of 100 per 100,000 down to the neighborhood of 2 in the course of ten years. It is the first part of the line showing no decline which calls now for emphasis, even at the expense of repetition (3).

What measures were available and applied in the effort to control diphtheria in this period? Notification had been introduced in some of the larger cities in the nineties, so that when it was adopted throughout the Province in 1901 the practice was fairly well recognized and established; the public and the profession were very well acquainted with diphtheria and its mortality, they feared it and sought any assistance that public health might give; consequently, cases diagnosed as diphtheria were faithfully reported, the degree of accuracy and completeness of the reporting far exceeding that in any other disease. In the larger cities, isolation hospitals existed or were built and were used for the larger part of the local cases. In rural Ontario and in the towns, isolation of



Although, in the pre-toxoid period, the rate of decline of diphtheria mortality in infancy was slightly greater than at other ages and, on the introduction of toxoid, the rate of decline was at first most marked in the school age group, the line showing the rates for all ages combined is fairly representative of the decline in each age group.

the case in the home was the rule. The efficiency of such isolation could only be what might be expected from some meagre understanding of the nature and means of spread of diphtheria and without the help of public health nurses. Throughout Ontario, the incriminated household was promptly placarded, and quarantine of contacts was rigorously applied. In 1916, diphtheria antitoxin, available by purchase since the late nineties, was supplied to every physician without stint and without cost by the then Provincial Board of Health, and its wide use as a prophylactic as well as a therapeutic measure was strongly encouraged. Laboratory services, entirely free, were developed, so that in the twenties by far the larger part of the Ontario population (about 3,000,000) was well and, for that time, efficiently served. Swabs of the case and of home and often of school contacts were taken by either the physician or the public health authority and reports of cultures were quickly returned. Medical students, either as a result or in spite of their instruction, carried away the very fixed idea that "control" (!) of diphtheria consisted of diagnosis, clinical and bacteriological, isolation of the case, administration of antitoxin to the case and to contacts, taking cultures of contacts, and notification of the case by the physician—and, by the public health authority, placarding of the household, and quarantine of contacts, coupled with taking cultures of contacts outside the household, when indicated.

In spite of the very determined effort to control diphtheria through all these measures, morbidity did not decline; it remained at its previous high level. It is possible, as has been discussed previously (3), that certain influences may have obscured the effects of the measures applied. Urbanization and generally increasing possibilities for contact through changing habits of life with vastly improved travel facilities may well have increased morbidity and thus offset reductions. The development and use of laboratory facilities and the changing concept of the disease may have allowed the inclusion of cases that would not have been diagnosed as such previously. The inauguration of school medical services and the provision of public health nurses and school nurses in some cities may have brought to light cases otherwise missed. It is difficult to appraise the influence of such factors in maintaining the level of the rates. Whatever that might be, however, the high peaks in 1920 and 1921 in both morbidity and mortality show indubitably that the measures taken, placarding and quarantine, free distribution of antitoxin for prophylaxis as well as treatment, swabbing, etc., did not achieve control. Failure must be admitted.

In the light of fuller understanding, this failure to control morbidity is not surprising. It is common knowledge, and has been thoroughly demonstrated and established (6), that contacts of known cases are infected to a much higher degree than are the general population, that they suffer much higher attack rates and are powerful spreaders of disease. Their quarantine is thus, from that standpoint, an eminently logical procedure. But it is also a fact that when diphtheria is strongly prevalent, as it was in those years, identified contacts of known cases yield only the smaller part of the total cases (7), the larger part developing from contact with unidentified and unknown sources in the general population. Quarantine of the known sources, relatively few in number in con-

trast to the many unknown, and in spite of their very high potentiality for spreading disease, could have only a limited effect on the over-all picture. Whether routine quarantine of known contacts, providing the smaller part of the whole problem, merited its cost and its disadvantages is a question. Could the cost be expended to better advantage or could quarantine be applied, and with wise discrimination, only in those circumstances in which it could be reasonably expected to yield relatively substantial results? At the very beginning of an outbreak or in isolated instances it could, conceivably, be a highly effectual means of control. After an outbreak is under way, according to the Ontario experience, its value must be limited. Be that as it may, the record shows that, in Ontario, control of morbidity was not obtained until toxoid was widely used. (Toxoid was introduced in 1926 but its use and its effects did not become widespread until about 1930.)

The line for the *mortality* rates shows a very gratifying decline previous to 1930 but neither the introduction of antitoxin nor the application of quarantine regulations nor the free distribution of antitoxin is specifically reflected by any marked acceleration in the rate of decline. This is not to say that antitoxin had no influence on mortality in diphtheria or was without results. Far from it! The influence, however, in the field practice of the day was not sufficient to be reflected immediately on the already declining mortality rate. On the other hand, the high mortality rates in 1920 and 1921 show clearly, and beyond all question, the essential lack of control, even of mortality. A survey (8) made in 1921 revealed the reasons for such failure of an efficient agent. The physician was not called until too late or diagnosis was delayed for other reasons. This failure of the free distribution of antitoxin adequately to control mortality is more readily understandable now in view of the fact that in the Services, with the troops constantly under complete medical surveillance, death from diphtheria, as intimated, did occur occasionally. Some delays in diagnosis with consequent deaths are thus inevitable, human, even under the most favourable conditions. The accumulated experience, therefore, teaches clearly that control of mortality is dependent on control of morbidity, a control that was not accomplished until toxoid was used.

The utter failure to control diphtheria morbidity through quarantine, swabbing, and the free and unlimited distribution of antitoxin and the failure adequately to control mortality do not prompt much hope that adequate general control can be achieved through analogous practice in any other disease for which an efficient prophylactic or therapeutic serum is or may become available. While, in measles for instance, more time is allowed for the use of the anti-serum and while, in order to prevent mortality, such prophylaxis can be limited to smaller and possibly practical numbers, and to well-defined groups and circumstances, the failures in diphtheria raise doubt that the results of even the free supply of serum in the field would be at all commensurate with its high degree of efficacy in specially selected cases. Recognition of this fact should encourage rather than deter the fullest and discreet use of serum, the only specific available at the present time.

SUMMARY

In the Ontario experience, control of morbidity or mortality from diphtheria was not obtained by the rigorous application of quarantine regulations, swabbing of known contacts and the free distribution of antitoxin. These measures fell very far short of control. Mortality was not controlled until morbidity was controlled, and morbidity was not controlled until toxoid was widely used. A large part of our child population apparently has not been immunized and is susceptible. The increase in diphtheria in this country at the present time, therefore, constitutes a threat which permits no complacency. The threat can be met, according to the Ontario experience, only by prevention through active immunization and re-immunization.

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ATTENTION TO DIPHTHERIA

SHORTLY after the 1914-18 war, diphtheria in Canada, the United States, and Europe rose to peaks higher than had been experienced for some years previously. All efforts to control the violent upward swing failed to stop it, if indeed they impeded it to any significant degree. It ran its course unchecked in spite of our "control" and took its toll of thousands (over 4,000 in Canada, 1920-21); there was no toxoid then. A few years after this unhappy and humiliating experience, toxoid came into the field and diphtheria rates fell quickly to levels lower than even the most sanguine proponents of toxoid had ever anticipated. For the first time, control was actually achieved. In the intervening years, however, full advantage has not been taken of this means. The continued existence of inadequately controlled foci in some centres, the general increase in diphtheria in the United States and Canada in the past year, the deaths occurring recently in the Ottawa area, and the facts as emphasized in this issue, that immunization of the children in Canada has been far from complete and that control of mortality is dependent on control of morbidity, should serve to stimulate renewed effort generally throughout the country. Any lag in immunization that has accumulated from apathy or complacency or a false sense of security or pressure of other problems should be overcome. If this is done, not only will the present threat of diphtheria be met, but, in contrast to the high peaks of the other post-war period, still lower rates than have yet been recorded can be confidently anticipated.

Twenty years ago the control of epidemics, of severe outbreaks, of diphtheria appeared a reasonable and worthy objective. As a result, there may have been a tendency in some places to press immunization only to that proportion of pre-school and school children considered necessary to achieve that objective. That day has passed. A few cases and one or two deaths now arouse more public concern than did thousands of cases and hundreds of deaths two decades ago. This is all to the good; it is progress. The only acceptable objective now is the widest possible control. This includes practically all diphtheria in childhood and

in selected adult groups—nurses, physicians, medical students and hospital staffs. Any diphtheria in any of these groups indicates failure which can hardly be condoned though it may be as difficult to place the blame as to credit the control. The need for the recall dose in childhood and school life is now generally recognized. In spite of the present difficulties in the immunization of adults, it may be necessary under special circumstances to extend the re-immunization program more widely. While the complete eradication of diphtheria is highly optimistic and possibly impractical at present, nevertheless a very high degree of control, higher than any yet achieved, is eminently practical. The occurrence of any case in any community lacking adequate immunization is a threat of further cases and deaths and permits no complacency. Adequate control of diphtheria has not been achieved through any measures apart from adequate, active immunization. The recent increases in morbidity and mortality show that to whatever degree active immunization has not been sufficient in any community, that community is vulnerable to attack.

JOHN JOSEPH HEAGERTY, M.D., C.M., D.P.H.

AFTER a brief illness, Dr. J. J. Heagerty died in Ottawa on February 7th. He had been actively associated with Federal health activities from 1911.

A graduate in medicine of McGill University in 1905, Dr. Heagerty first served the Federal Government as bacteriologist at Quebec in 1911. Choosing public health as his career, he took post-graduate work at McGill, receiving the Diploma in Public Health in 1912. He then became head of the quarantine hospital at Grosse Isle, Quebec, continuing in this appointment until 1919, except for a short period when he acted as quarantine officer at Saint John, New Brunswick.

With the establishing of the Federal Department of Health in 1919, Dr. Heagerty was selected by Dr. John A. Amyot to serve as chief of the newly created Division of Venereal Disease Control. He became Executive Assistant of the Department on July 1, 1928, and was appointed Director of Public Health Services on April 1, 1938. On his retirement from that post in December 1945, he was named Special Assistant to the Deputy Minister of Health.

During these years, Dr. Heagerty saw the pendulum of public health swing forward and backward, for they included not only the period of the initial expansion of the Department of Health following its establishment, but also the ten years of the depression. The Division of Venereal Disease Control, which was assisted to a high degree of usefulness by his lecturing and organizing ability, was discontinued and not re-established until the second world war revealed the urgency of the need. The Division of Child and Maternal Hygiene was also disbanded during the depression. During that period, Dr. Heagerty carried the responsibilities of three senior medical administrative positions in the Department, and his was indeed a difficult task during the years of retrenchment. In 1937 the Division of Child and Maternal Health was re-established and three other divisions were authorized, largely because of his representations. The beginning of the second world war again caused a marked reduction in the financial

support of the Department, and the work of a number of the divisions was almost disbanded. Fortunately, Dr. Heagerty lived to see new divisions established at the close of the war and the Department's possibilities for usefulness greatly expanded.

Following the outbreak of war in 1939, Dr. Heagerty devoted himself increasingly to the study of health insurance. When the Federal Government directed that a study of health-insurance plans be made, he was appointed chairman of the Advisory Committee on Health Insurance which was created by Order-in-Council on February 5, 1942. During the following months, with a committee composed of members from different governmental departments, and with the able assistance of Mr. J. T. Marshall, Chief of the Vital Statistics Branch in the Dominion Bureau, he compiled a massive volume of 558 pages presenting, in addition to the Draft Bill on Health Insurance, a historical survey of health insurance, outlines of national health-insurance plans in operation in various countries, a statistical survey of public health in Canada, and the submissions to the Advisory Committee from various organizations. This report was presented to the Special Committee on Social Security of the House of Commons on March 16, 1943. Dr. Heagerty was a master hand at drafting legislation, and health-insurance legislation appearing on the statute books of Canada will bear the impress of his personality and will reflect his active concern for the health and happiness of his fellow-citizens.

Dr. Heagerty early established himself as a medical historian, and he will be remembered for his accomplishments in this field as well as for his leadership in public health. In 1928 he published a two-volume work entitled "Four Centuries of Medical History in Canada," which was the result of years of study of the historical records available in Ottawa, Montreal, and Quebec. This monumental task, which was undertaken in addition to his exacting Civil Service duties, involved painstaking research to obtain original documents covering the very early days of Canadian history. To-day, few would attempt such an undertaking, even though commissioned to do so and given every assistance. Much of the material which he gathered remained unpublished, but in later years the extent of these records was revealed in public lectures and in a series of radio presentations dealing with the early history of Canadian medicine. In 1940 he made a further contribution to medical literature with the publication of his "The Romance of Medicine in Canada".

In the King's Birthday Honours List of 1943, Dr. Heagerty was made a Companion, Imperial Service Order (I.S.O.), a well-deserved recognition of his thirty-odd years of outstanding service as public health leader and medical historian.

PUBLIC HEALTH EDUCATION

FIGHTING CHILDHOOD'S FOE*

DR. KATHARINE M. HIRST
Acting Medical Officer of Health
Borough of Islington
London, England

DIPHTHERIA immunization has been carried out in the form of free treatment for a number of years in the Borough of Islington, London, mainly through municipal clinics and in elementary schools by the London County Council and school doctors, and also by private practitioners to whom the borough supplies the immunizing material free of charge. During the war, in spite of difficulties, the clinics were maintained and attendances even increased, especially during the time of repeated air-raids, when children were congregated in shelters night after night, and parents realized the danger of the spread of infections.

The proportion of children immunized rose steadily during the war until, by the end of 1944, it was estimated that 80 per cent of the school children (i.e. children over 5 years of age), and 50 per cent of the children under school age were immunized, or had been tested and shown to have a negative Schick reaction. The percentage of school children may be regarded as reasonably satisfactory, but it is evident that a higher proportion of the pre-school children should be immunized if the danger of epidemic spread is to be minimized.

Parents' Consent

Immunization in Britain is not compulsory and there are obvious difficulties in persuading the parents of young children to obtain immunization voluntarily. For the older children, immunization is carried out at school. All that is needed is to obtain the parents' consent, and then, with the co-operation of the school teachers, clinics can be arranged in school hours without further trouble to the parents and without requiring the attendance of the mother. For the pre-school child the parents must first be visited or written to and their consent obtained, and then the mother must be asked to bring the child on a particular day at a particular time to a clinic which may be some little distance from her home. A certain amount of waiting at the clinic is unavoidable, and she must make at least two attendances.

It was realized that wartime conditions made it difficult for some mothers to bring these young children to a clinic. Many mothers were on whole-time or part-time war-work; for others, wartime shopping often meant spending many hours standing in queues; living in war-damaged houses added to the mother's work, and neighbours and friends, themselves often busy with war-work, were not available to help or to mind a young baby while a mother went to a clinic. Altogether it was often impossible for a busy, harassed mother to find time or

**The United Kingdom Office, Ottawa, is to be congratulated on making available to Canadian journals brief articles in many fields. The majority of the articles on public health are not intended for publication in scientific journals, but the Editorial Board believes that medical officers of health throughout Canada will be interested in Dr. Hirst's account of the efforts of the Borough of Islington to extend the use of diphtheria toxoid.*

energy to take her children to be immunized. Others, of course, were perhaps not sufficiently interested to make the effort.

It was decided, therefore, to organize a special campaign for the immunization of young children, and that the principal feature of this campaign should be a travelling clinic in which children could be immunized practically on their own door-steps without any waiting and with the minimum of trouble to the mother. The mobile clinic in Islington was originally planned by Dr. Freeman, Islington's Medical Officer of Health, to begin work in the summer of 1944, but about that time, after a raid-free period, the Germans began using the flying-bomb against London. It was obviously impossible to hold clinics in the streets under such conditions, and the project had to be temporarily abandoned, but was revived some twelve months later.

Vigorous Campaign

The campaign opened with the exhibition of a short film on immunization at all cinemas in the borough for three days during the month of April. In May, specially designed posters were displayed throughout the borough drawing attention to the dangers of diphtheria. About the same time a short article by the Acting Medical Officer of Health was published in the local newspaper announcing the new mobile clinic; and newspaper advertisements and talks by health visitors to mothers at welfare centres and in their own homes, further stimulated interest in immunization.

The mobile clinic began work at the end of May, and continued for the next two months. The borough was divided into a number of districts, and a motor car fitted with a loud-speaker toured such district before the visit of the mobile clinic. Well-populated side streets were chosen, and the car drove slowly along a street while lively music was played on a gramophone fitted to the loud-speaker. When people opened their doors and windows to see what was going on, the car drew up, the music stopped, and a short message from the Medical Officer of Health was broadcast through the loud-speaker, particularly pointing out the danger of diphtheria to young children, and telling people that a mobile clinic for diphtheria immunization would come to that street at a certain time the next day—or perhaps later the same day. This was repeated in several streets in one locality. The next day or the same evening the mobile clinic, together with the loud-speaker car, drove to that locality, arriving in each street at the time that had been announced beforehand. While the doctor and the nurse were at work in the clinic, the loud-speaker car drove up and down the neighbouring streets, again playing music to attract attention, and then broadcasting short messages telling people just where the clinic was standing and how long it would be there. At the same time assistants talked to mothers and fathers in the street or in their doorways, encouraging them to overcome any hesitation and take their children to the clinic while it was in their street. In this way five or six pre-arranged stops would be made in the course of a morning or evening's work, and from 30 to 80 children would be treated, the number depending on the weather and the response of different localities.

The vehicle used as a mobile clinic was a single-deck motor coach which had been stripped of its seating and adapted for this purpose. The mothers and children entered by a door near the front of the coach. This front part had been partitioned off to form a small office where each mother signed a form agreement to her child's being immunized, and a clerk filled out the necessary record card for each case. The mother and child then went through into the larger rear part of the coach which had been simply equipped as a clinic. Small tables bolted to the floor, a couple of chairs, an oil-stove, and a portable wash-basin were all the furniture that was necessary. Syringes, needles and dishes were sterilized before the clinic started out, but needles could

also be re-sterilized as required, on the oil-stove.

Gifts of Sweets

One important item of equipment in the children's eyes was a big jar of sweets. Even under war conditions, with rationing of chocolate and sweets, the Government has allowed special permits for sweets for diphtheria-immunization clinics. With his eyes on that jar of sweets, and the promise of one, even a small child disregards a tiny prick in his arm and goes out happy, while bigger children who have already been immunized sometimes look on enviously through the window and wish they could be done again! When the injection had been given, followed, of course, by the sweet, the mother carried the child out and, all alone, he was home again within a minute or two.

The immunizing material used in the borough is alum precipitated toxoid supplied by the Ministry of Health. This is given as 0.2 cc. for the first dose, and 0.5 cc. for the second dose two to four weeks later. For the rare cases that may get a sharp reaction to the first dose of A.P.T., toxoid antitoxin floccules are used for the subsequent immunization, and this immunizing agent is also used for adults and the oldest children, in doses of 1 cc., 1 cc., and 1.5 cc. at fortnightly intervals. Children under the age of 9 years are not given a preliminary Schick test, but all cases are Schick-tested three months after the immunizing course of injections has been completed.

For children who had received their first injection in the mobile clinic, the second injection was arranged by sending postcards to the mothers when this injection was due, telling them the day and time that the clinic would be in their street for second injections. If any children due to attend did not turn up at this second visit of the clinic, they were written to again, and, if necessary, visited also, and given an appointment at one of the fixed clinics regularly held in various parts of the borough. Similarly, a Schick test three months later is arranged at one of the fixed clinics in the neighbourhood.

The mobile clinic operated for four days a week during the months of June and July, three sessions in the late afternoon and one in the morning each week. In all, 36 sessions were held and 1,017 children received their first injection for diphtheria immunization in this mobile clinic. Of these more than 700 had completed their immunizing course at the close of the special campaign, and arrangements were made for the remainder to be given appointments to complete their course at one of the fixed clinics. It is probable that the great majority of these children would not have presented themselves for immunization but for the work of the mobile clinic. Moreover, this was not the full effect. During the time that the mobile clinic was in action, the attendances at the regular fixed immunization clinics noticeably increased. There is no doubt that the mobile clinic and its attendant loud-speaker car travelling all over the district formed a striking and effective method of propaganda and made the population of the borough "immunization-conscious" to a degree that could hardly have been achieved by any other method. It is hoped that it will prove possible to repeat the program during next summer, possibly for a longer period.

NEWS

British Columbia

DR. J. S. CULL, formerly Assistant Provincial Health Officer, has been appointed Deputy Provincial Health Officer.

DR. J. M. HERSHEY, Director of the Central Vancouver Island Health Unit, has been appointed Assistant Provincial Health Officer.

MISS E. M. Y. LOVE, formerly Messing Officer with the R.C.A.F., has succeeded Miss Mary Baldwin as Senior Nutrition Consultant.

MR. A. R. PEERS has been appointed Sanitarian with the Provincial Board of Health, in charge of tourist and auto camps. Before his release from the Army, Captain Peers was in the office of the Assistant Director of Hygiene of Army Headquarters in Holland.

MISS K. MCNEVIN has been appointed to the Provincial staff as Health Education Consultant.

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THE FEDERAL NUTRITION DEMONSTRATION TEAM, comprised of Dr. F. W. Hanley, Medical Officer, and Miss Edith Perkins, Nurse Technician of the Nutrition Division of the Department of National Health and Welfare, is holding a series of clinics throughout the Province. The clinics are being held at the request of the Province of British Columbia. Sample groups of children in both urban and rural areas are being surveyed. The survey includes dietary studies, biochemical tests, and a physical examination. It is the first large-scale survey of this type to be held in Canada.

The purpose of the clinics is to acquaint professional and non-professional persons interested in nutrition and health with their local problems. The work is primarily educational, contributing to the scientific knowledge of general trends in the nutrition status of the whole population.

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Alberta

DR. MALCOLM R. BOW, D.P.H., Deputy Minister of Health, has announced that the Division of Health Education in Alberta is expanding its film service so that the film library operated by the Division will be easily accessible to interested groups all over the Province. At the same time, a means of better co-operation with school teachers in the health-education field has been provided through a monthly news letter in the Alberta Teachers' Association Magazine. This feature is designed to keep teachers informed on new developments and aids in health education, as well as to provide answers for their specific problems.

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ALBERTA'S HOSPITAL SERVICE is also expanding continuously. Six new municipal hospitals are under construction at the present time and sixteen more hospital districts are planning to come under the Municipal Hospitals Act.

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THE DIVISION OF ENTOMOLOGY is continuing to develop its program. Mr. J. H. Brown, M.Sc., Director of this Division, obtained a travelling fellowship from the International Health Division of The Rockefeller Foundation last fall, and over a period of two months he visited thirty-eight States, observing the entomological work being done at State, Federal and university public health laboratories. Considerable time was devoted to study of rat-control methods, with particular attention to suitable means of preventing their invasion into Alberta.

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Saskatchewan

THE DEPARTMENT OF PUBLIC HEALTH has acquired a Norseman aircraft to provide emergency air ambulance service in Saskatchewan south of Prince Albert. (Service in the northern area will be provided by aircraft of the Department of Natural Resources.) According to Pilot Keith Malcolm, of the Norseman ambulance, the great proportion of landings to pick up patients will be made on unprepared fields. The condition of the patients will in many instances necessitate low-altitude flying. The service

has been provided to transport emergency cases to medical service and hospitals, and a flat rate of $25 per flight is being charged. Calls will be accepted by the Department's Medical Services Division if they come from physicians or other designated responsible persons.

The Division of Mental Services has acquired three former R.C.A.F. ambulances for transportation of mental patients. The motor ambulances will be used in preference to trains and buses and will provide privacy not possible on public vehicles.

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DR. HENRY S. DOYLE, D.P.H., has been appointed Director of the Division of Communicable Diseases, succeeding Dr. F. C. Middleton, who will retire shortly on superannuation. Doctor Middleton joined the Department in 1916.

Doctor Doyle graduated in medicine from the University of Toronto in 1936 and received the Diploma in Public Health in 1945. He served with the armed forces from 1940 until late in 1945 and was overseas in 1941 and 1942. At the time of his release from service he was Principal Medical Officer, No. 2 Air Command, R.C.A.F., Winnipeg. Doctor Doyle was previously with the Department of Public Health of Toronto as house physician and senior resident physician of Riverdale Isolation Hospital. He also spent a year on the staff of Toronto Western Hospital.

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FULL-TIME PUBLIC HEALTH SERVICES will be set up in two of Saskatchewan's fourteen proposed health regions as soon as personnel becomes available, the Saskatchewan Health Services Planning Commission reports. The two regions are Swift Current (No. 1) and Weyburn-Estevan (No. 3), with a combined population of about 105,000.

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THE DEPARTMENT OF PUBLIC HEALTH is conducting schools for food-handlers. Medical health officers, restaurateurs and hotelkeepers have shown much interest in the schools, which are being conducted by the Division of Sanitation and the Division of Health Education. An itinerary including principal marketing towns has been extended into March and will grow as requests for the schools are received from local health authorities.

Manitoba

SIX FULL-TIME HEALTH UNITS are now operating in Manitoba under the provisions of the Health Services Act (1945). These include three new units established as of January 1, 1946; and three previous units which have been transferred to the new scheme. The latter are: the St. Boniface Unit, whose medical director is Dr. Paul L'Heureux; the St. James-St. Vital Unit, under Dr. Murray Cleghorn; and the Dauphin Unit, under Dr. R. M. Creighton. One unit established prior to the Health Services Act still remains on the old basis; this is the Brandon Unit.

The new units established as of January 1st are the Portage Unit, the Ste. Anne Unit, and the Swan Valley Unit.

The Portage full-time Local Health Unit has headquarters at Portage la Prairie, and the medical director is Dr. Charles C. Manly, graduate of Manitoba Medical College and recently released from service with the armed forces. Besides the medical director, the staff consists of four public health nurses, one sanitary inspector, and clerical staff. The unit includes the municipalities of North Norfolk, Portage rural, Cartier, St. Francis Xavier, and Portage City. The total population is approximately 25,000 persons.

The Ste. Anne full-time Local Health Unit has headquarters at Ste. Anne, and the medical director is Dr. Gérard E. L'Etienne, graduate of Manitoba Medical College and recently Acting Medical Director of the St. Boniface Health Unit. Besides the medical director, the staff consists of four public health nurses, one sanitary inspector, and clerical staff. The unit includes the municipalities of Taché, Ste. Anne, Hanover, Richot and De Salaberry. The total population is approximately 22,000 persons.

The Swan Valley full-time Local Health Unit has headquarters at Swan River, and the medical director is Dr. A. B. Searle, graduate of Manitoba Medical College and recently released from service with the armed forces. Besides the medical director, the staff consists of three public health nurses, one sanitary inspector, and clerical staff. The unit includes the rural municipalities of Swan River and Minitonas, the incorporated towns of Swan River and Minitonas, and considerable unorganized territory to the

north and east. The total population is approximately 15,000 persons.

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DR. E. R. RAFUSE has been appointed Director of Hospitalization under the Department of Health and Public Welfare (Extension of Health Services). Dr. Rafuse is a graduate of Harvard Medical School, and was attached to the Saskatoon City Hospital for two years before he enlisted for military service. After joining the army, he was in command of Regina Military Hospital until his release in December. In his new position, Dr. Rafuse will become secretary to the Hospital Council of Manitoba, and will be responsible for all aspects of hospital administration coming under provincial jurisdiction. These include the supervison of the statutory grant to hospitals, inspection, annual reports, and supervision of local Hospital Boards.

MR. ARTHUR E. TURNER has been appointed accountant in the Division of Hospitalization. Formerly an accountant with the Old Age Pensions branch of the Department of Public Works, Mr. Turner served with the R.C.A.F. from June, 1940, until the end of 1945. Mr. Turner's chief task in his new position is to organize and supervise the development of a uniform system of accounting for all hospitals in Manitoba. Such a system will make available to the Department uniform reports and financial statements, and will be a more accurate basis for computing grants, compiling statistics, and keeping Departmental records.

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TWENTY-ONE STUDENTS are attending the first school for practical nurses, which opened January 14th in Winnipeg, under the supervision of the Manitoba Department of Health and Public Welfare. This is the first class of students in Canada to be offered a course in practical nursing, conducted by a department of the government, and leading to licensure upon completion.

The course is one year in length including one month of holidays. The first three months are spent in the classroom and the last eight on hospital wards. An examination in theory will be given at the end of the three-month period, and a practical examination at the end of the clinical experience.

Five hospitals are participating in the school for practical nurses: two in Winnipeg, one at Steinbach, one at Morden, and one at Selkirk. Courses offered by two other institutions have been approved by the Department of Health and Public Welfare.

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LEADERSHIP-TRAINING COURSES are now being conducted by the Physical Fitness Division of the Department of Health and Public Welfare. Two such courses have been held in Brandon, the first last November, the second from January 14th to 19th. A similar course is being planned in Winnipeg from February 11th to 16th, and one in Flin Flon sometime in March. The courses include gymnastics, physical education, sports, games, and folk dancing. An assistant to Mr. Hart Devenney, Director of Physical Fitness, has been appointed in the person of Mr. George Nick, recently released from the R.C.A.F. The Director is Manitoba representative on the National Physical Fitness Council and is chairman of the National Council's Industrial Recreation Committee. Other activities of the Director include visits to Manitoba communities, co-operation with other groups (such as the Manitoba Federation of Agriculture and Co-operation) interested in physical fitness and recreation, talks to special groups, articles and radio talks, provision of reference library and resource materials, assistance to communities hiring leaders, and general stimulation of recreational activity in Manitoba.

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New Brunswick

THE NEW BRUNSWICK Department of Health has announced the appointment of Dr. R. D. Landry as District Medical Health Officer for the Counties of Kent, Westmorland and Albert. Dr. Landry has just completed over five years' service with the R.C.A.M.C. as Major. He enlisted at the beginning of the war and served in England, France, and Belgium.

Dr. G. C. Leger, who formerly occupied the post, has resigned and returned to private practice.